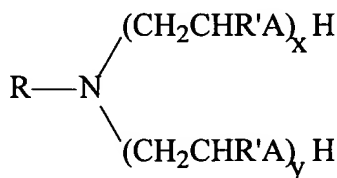


1 **WHAT IS CLAIMED IS:**

2 1. A method of electrically logging a subterranean well, the method comprising:

3 a) drilling the subterranean well with an invert emulsion drilling fluid,  
4 wherein said fluid includes: an oleaginous fluid; a non-oleaginous fluid; and an amine  
5 surfactant having the structure  
6



7  
8  
9 wherein R is a C<sub>12</sub>-C<sub>22</sub> aliphatic hydrocarbon; R' is an independently  
10 selectable from hydrogen or C<sub>1</sub> to C<sub>3</sub> alkyl; A is NH or O, and 1 ≤ x+y ≤ 3;

11 b) adding acid to the invert emulsion drilling fluid in a sufficient amount to  
12 reverse the filtercake solids from being oil-wet to being water-wet; and  
13 c) electrically logging said well.  
14

15 2. The method of claim 1 wherein said oleaginous fluid comprising from 5 to about  
16 100% by volume of the oleaginous fluid of a material selected from a group consisting of  
17 esters, ethers, acetals, di-alkylcarbonates, hydrocarbons, and combinations thereof.  
18

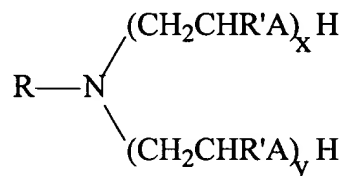
19 3. The method of claim 1 wherein said non-oleaginous liquid is an aqueous liquid.  
20

21 4. The method of claim 3 wherein said aqueous liquid is selected from the group  
22 consisting of sea water, a brine containing organic or inorganic dissolved salts, a liquid  
23 containing water-miscible organic compounds, and combinations thereof.  
24

25 5. The method of claim 1 wherein said amine surfactant is selected from  
26 diethoxylated tallow amine; diethoxylated soya amine; N-aliphatic-1,3-diaminopropane  
27 wherein the aliphatic group is a C<sub>12</sub> to C<sub>22</sub> hydrocarbon; or combinations thereof.

6. A method of gravel packing a downhole area of a subterranean well, said method comprising:

a) forming a mixture of a gravel packing material and an invert emulsion drilling fluid, wherein said fluid includes: an oleaginous fluid; a non-oleaginous fluid; an amine surfactant having the structure



wherein R is a C<sub>12</sub>-C<sub>22</sub> aliphatic hydrocarbon; R' is an independently selectable from hydrogen or C<sub>1</sub> to C<sub>3</sub> alkyl; A is NH or O, and 1 ≤ x+y ≤ 3;

- b) injecting said mixture of gravel packing material and invert emulsion into a subterranean well so as to gravel pack the downhole area ; and
- c) adding acid to said fluid so as to change the oil-wet gravel packing materials into water-wet gravel packing materials and;
- d) washing said well with an aqueous based wash solution.

7. The method of claim 6 wherein said oleaginous fluid comprising from 5 to about 100% by volume of the oleaginous fluid of a material selected from a group consisting of esters, ethers, acetals, di-alkylcarbonates, hydrocarbons, and combinations thereof.

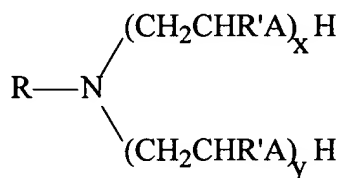
8. The method of claim 6 wherein said non-oleaginous liquid is an aqueous liquid.

9. The method of claim 8 wherein said aqueous liquid is selected from the group consisting of sea water, a brine containing organic or inorganic dissolved salts, a liquid containing water-miscible organic compounds, and combinations thereof.

10. The method of claim 6 wherein said amine surfactant is selected from diethoxylated tallow amine; diethoxylated soya amine; N-aliphatic-1,3-diaminopropane wherein the aliphatic group is a C<sub>12</sub> to C<sub>22</sub> hydrocarbon; or combinations thereof.

11. A method of injecting drill cuttings into a downhole area of a subterreanean well, said method comprising:

a) collecting the drilling cuttings from a subterreanean wel drilled with an invert emulsion drilling fluid, said invert emulsion drilling fluid includes: an oleaginous fluid; a non-oleaginous fluid; an amine surfactant having the structure



wherein R is a C<sub>12</sub>-C<sub>22</sub> aliphatic hydrocarbon; R' is an independently selectable from hydrogen or C<sub>1</sub> to C<sub>3</sub> alkyl; A is NH or O, and 1 ≤ x+y ≤ 3;

- c) adding acid to said drilling cuttings so as to change the drilling cuttings from being oil wet to being water wet;
- d) grinding and suspending said cuttings in an aqueous based injection fluid; and
- e) injecting said suspension of cuttings in injecting fluid into a disposal zone in a subterranean well.

12. The method of claim 11 wherein said oleaginous fluid comprising from 5 to about 100% by volume of the oleaginous fluid of a material selected from a group consisting of esters, ethers, acetals, di-alkylcarbonates, hydrocarbons, and combinations thereof.

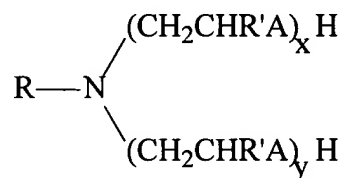
13. The method of claim 11 wherein said non-oleaginous liquid is an aqueous liquid.

1 14. The method of claim 13 wherein said aqueous liquid is selected from the group  
2 consisting of sea water, a brine containing organic or inorganic dissolved salts, a liquid  
3 containing water-miscible organic compounds, and combinations thereof.

4  
5 15. The method of claim 11 wherein said amine surfactant is selected from  
6 diethoxylated tallow amine; diethoxylated soya amine; N-aliphatic-1,3-diaminopropane  
7 wherein the aliphatic group is a C<sub>12</sub> to C<sub>22</sub> hydrocarbon; or combinations thereof.

8  
9 16. A method of fracturing a subterranean formation, the subterranean formation  
10 being in fluid communication with the surface via a well, the method comprising:

11 a) injecting a fracturing fluid into said well, wherein said fracturing fluid includes:  
12 an oleaginous fluid; and an amine surfactant having the structure  
13



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15  
16 wherein R is a C<sub>12</sub>-C<sub>22</sub> aliphatic hydrocarbon; R' is an independently selectable  
17 from hydrogen or C<sub>1</sub> to C<sub>3</sub> alkyl; A is NH or O, and 1 ≤ x+y ≤ 3; and oil-wet  
18 propanant material;

19  
20 b) pressurizing said fluid so as to cause the subterranean formation to fracture and  
21 allow the propanant materials to enter said crack;

22 c) adding acid to said fluid so as to change the oil-wet propanant materials into  
23 water-wet propanant materials and;

24 d) washing said well with an aqueous based wash solution.  
25

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17. The method of claim 16 wherein said oleaginous fluid comprising from 5 to about 100% by volume of the oleaginous fluid of a material selected from a group consisting of esters, ethers, acetals, di-alkylcarbonates, hydrocarbons, and combinations thereof.

18. The method of claim 16 wherein the fracturing fluid further includes a non-oleaginous liquid.

19. The method of claim 18 wherein said non-oleaginous liquid is selected from the group consisting of sea water, a brine containing organic or inorganic dissolved salts, a liquid containing water-miscible organic compounds, and combinations thereof.

20. The method of claim 16 wherein said amine surfactant is selected from diethoxylated tallow amine; diethoxylated soya amine; N-aliphatic-1,3-diaminopropane wherein the aliphatic group is a C<sub>12</sub> to C<sub>22</sub> hydrocarbon; or combinations thereof.

21. The method of claim 16 wherein the propanant material is selected from the group consisting of quartz gravel, sand, glass beads, ceramic pellets, and combinations thereof.

Add  
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